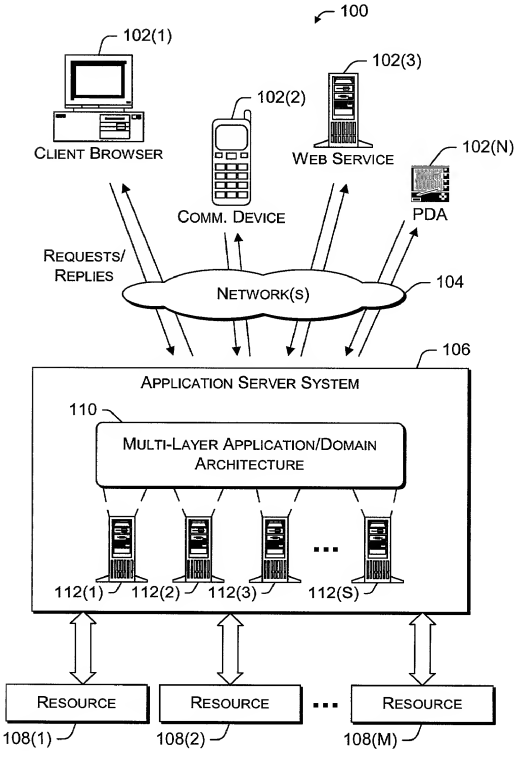
100
102(1)
CLIENT BROWSER
102(2)
COMM. DEVICE
102(3)
WEB SERVICE
102(N)
PDA
REQUESTS/
REPLIES
NETWORK(S)
104
106
APPLICATION SERVER SYSTEM
110
MULTI-LAYER APPLICATION/DOMAIN
ARCHITECTURE
112(1)
112(2)
112(3)
112(S)
RESOURCE
RESOURCE
RESOURCE
108(1)
108(2)
108(M)

Fig. 1

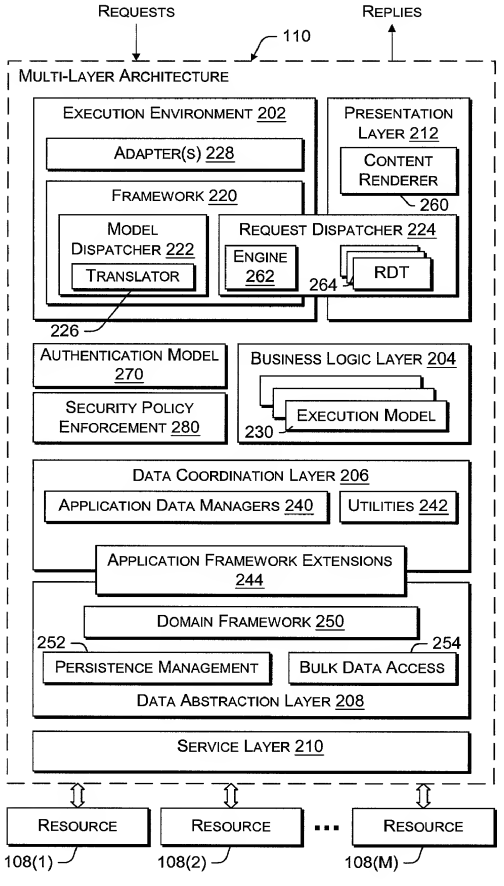
REQUESTS
REPLIES
110
MULTI-LAYER ARCHITECTURE
EXECUTION ENVIRONMENT 202
ADAPTER(S) 228
FRAMEWORK 220
MODEL DISPATCHER 222
TRANSLATOR
REQUEST DISPATCHER 224
ENGINE 262
RDT
264
PRESENTATION LAYER 212
CONTENT RENDERER
260
226
AUTHENTICATION MODEL 270
SECURITY POLICY ENFORCEMENT 280
BUSINESS LOGIC LAYER 204
EXECUTION MODEL
230
DATA COORDINATION LAYER 206
APPLICATION DATA MANAGERS 240
UTILITIES 242
APPLICATION FRAMEWORK EXTENSIONS 244
DOMAIN FRAMEWORK 250
252
254
PERSISTENCE MANAGEMENT
BULK DATA ACCESS
DATA ABSTRACTION LAYER 208
SERVICE LAYER 210
RESOURCE
RESOURCE
RESOURCE
108(1)
108(2)
108(M)

Fig. 2

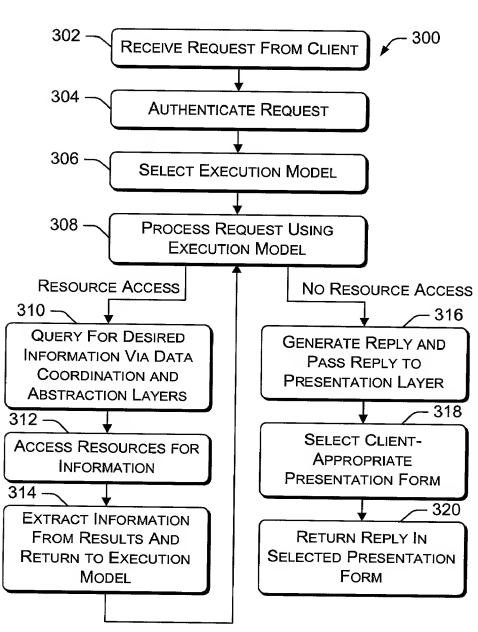
GENERAL OPERATION
302
RECEIVE REQUEST FROM CLIENT
300
304
AUTHENTICATE REQUEST
306
SELECT EXECUTION MODEL
308
PROCESS REQUEST USING EXECUTION MODEL
RESOURCE ACCESS
NO RESOURCE ACCESS
310
QUERY FOR DESIRED INFORMATION VIA DATA COORDINATION AND ABSTRACTION LAYERS
312
ACCESS RESOURCES FOR INFORMATION
314
EXTRACT INFORMATION FROM RESULTS AND RETURN TO EXECUTION MODEL
316
GENERATE REPLY AND PASS REPLY TO PRESENTATION LAYER
318
SELECT CLIENT-APPROPRIATE PRESENTATION FORM
320
RETURN REPLY IN SELECTED PRESENTATION FORM

Fig. 3

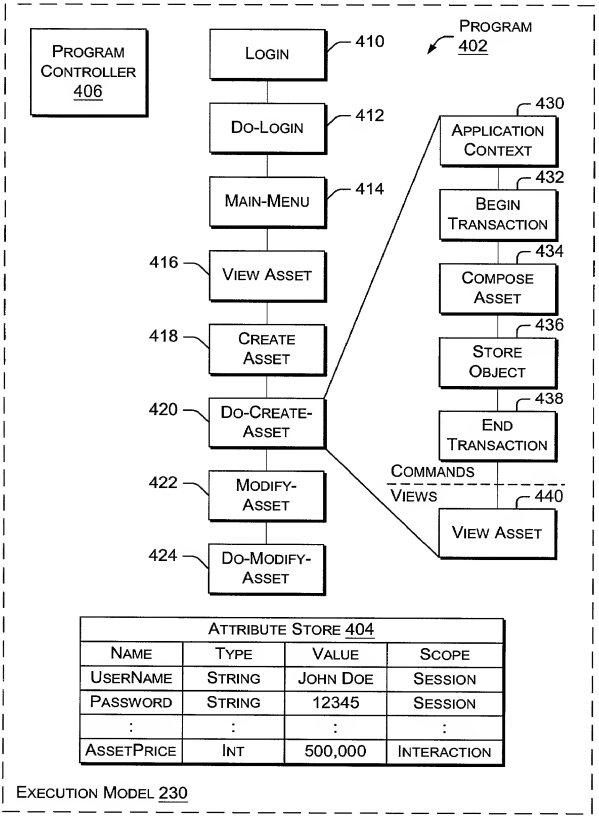
PROGRAM CONTROLLER 406
LOGIN
410
PROGRAM 402
DO-LOGIN
412
MAIN-MENU
414
VIEW ASSET
416
CREATE ASSET
418
DO-CREATE-ASSET
420
MODIFY-ASSET
422
DO-MODIFY-ASSET
424
APPLICATION CONTEXT
430
BEGIN TRANSACTION
432
COMPOSE ASSET
434
STORE OBJECT
436
END TRANSACTION
438
COMMANDS
VIEWS
VIEW ASSET
440
ATTRIBUTE STORE 404
NAME | TYPE | VALUE | SCOPE
USERNAME | STRING | JOHN DOE | SESSION
PASSWORD | STRING | 12345 | SESSION
: | : | : | :
ASSETPRICE | INT | 500,000 | INTERACTION
EXECUTION MODEL 230

Fig. 4

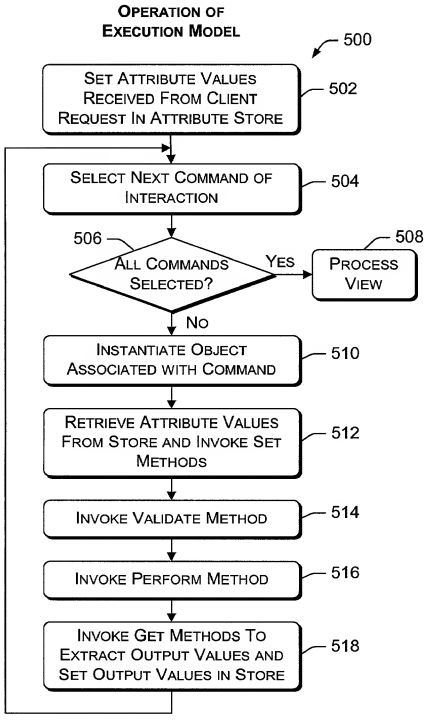
OPERATION OF EXECUTION MODEL
500
SET ATTRIBUTE VALUES RECEIVED FROM CLIENT REQUEST IN ATTRIBUTE STORE
502
SELECT NEXT COMMAND OF INTERACTION
504
506
ALL COMMANDS SELECTED?
YES
508
PROCESS VIEW
NO
INSTANTIATE OBJECT ASSOCIATED WITH COMMAND
510
RETRIEVE ATTRIBUTE VALUES FROM STORE AND INVOKE SET METHODS
512
INVOKE VALIDATE METHOD
514
INVOKE PERFORM METHOD
516
INVOKE GET METHODS TO EXTRACT OUTPUT VALUES AND SET OUTPUT VALUES IN STORE
518

Fig. 5

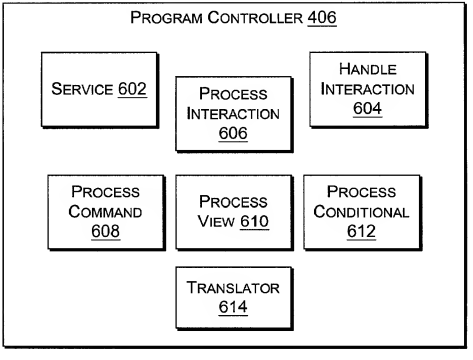
PROGRAM CONTROLLER 406
SERVICE 602
PROCESS INTERACTION 606
HANDLE INTERACTION 604
PROCESS COMMAND 608
PROCESS VIEW 610
PROCESS CONDITIONAL 612
TRANSLATOR 614

Fig. 6

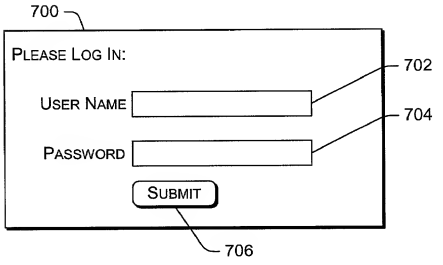

Fig. 7

FOLIO: 29099.0001

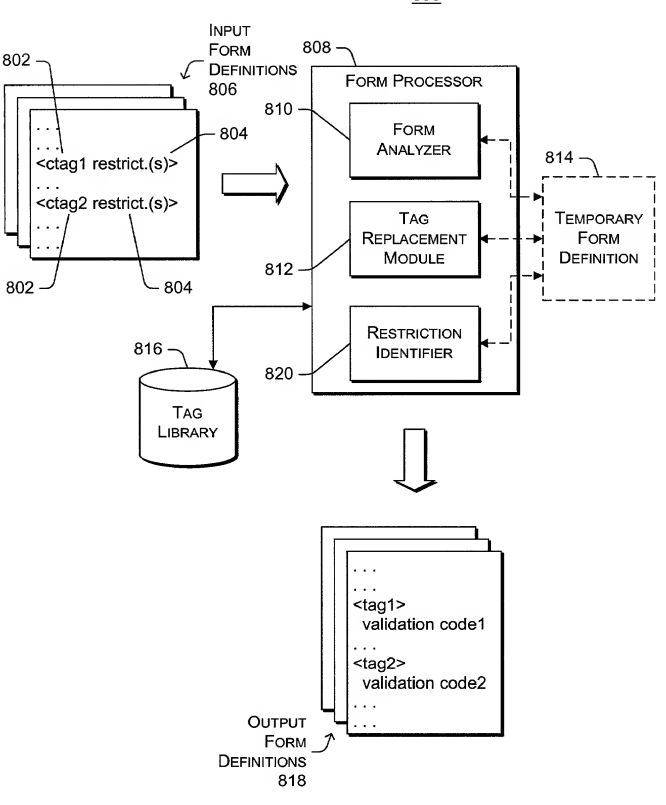
800
INPUT FORM DEFINITIONS 806
802
804
<ctag1 restrict.(s)>
<ctag2 restrict.(s)>
808
FORM PROCESSOR
810
FORM ANALYZER
812
TAG REPLACEMENT MODULE
820
RESTRICTION IDENTIFIER
814
TEMPORARY FORM DEFINITION
816
TAG LIBRARY
<tag1>
validation code1
<tag2>
validation code2
OUTPUT FORM DEFINITIONS 818

Fig. 8

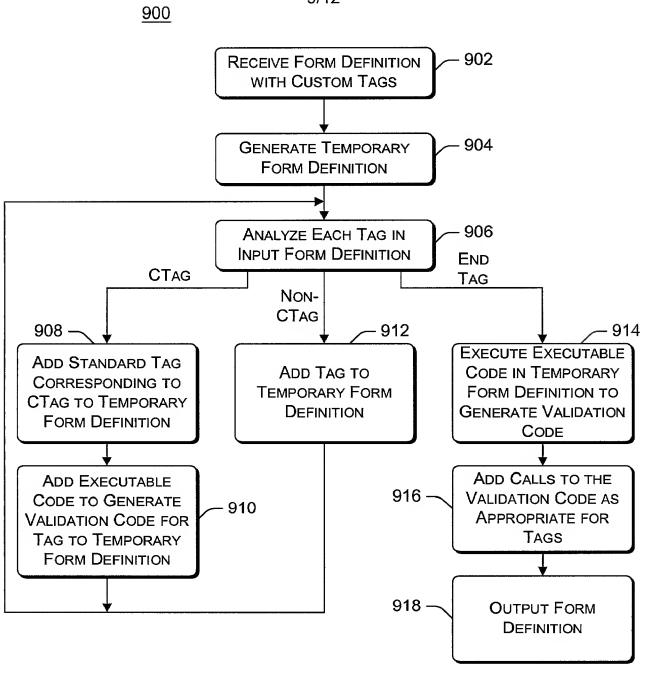
900
RECEIVE FORM DEFINITION WITH CUSTOM TAGS
902
GENERATE TEMPORARY FORM DEFINITION
904
ANALYZE EACH TAG IN INPUT FORM DEFINITION
906
CTAG
NON-CTAG
END TAG
908
ADD STANDARD TAG CORRESPONDING TO CTAG TO TEMPORARY FORM DEFINITION
912
ADD TAG TO TEMPORARY FORM DEFINITION
914
EXECUTE EXECUTABLE CODE IN TEMPORARY FORM DEFINITION TO GENERATE VALIDATION CODE
ADD EXECUTABLE CODE TO GENERATE VALIDATION CODE FOR TAG TO TEMPORARY FORM DEFINITION
910
916
ADD CALLS TO THE VALIDATION CODE AS APPROPRIATE FOR TAGS
918
OUTPUT FORM DEFINITION

Fig. 9

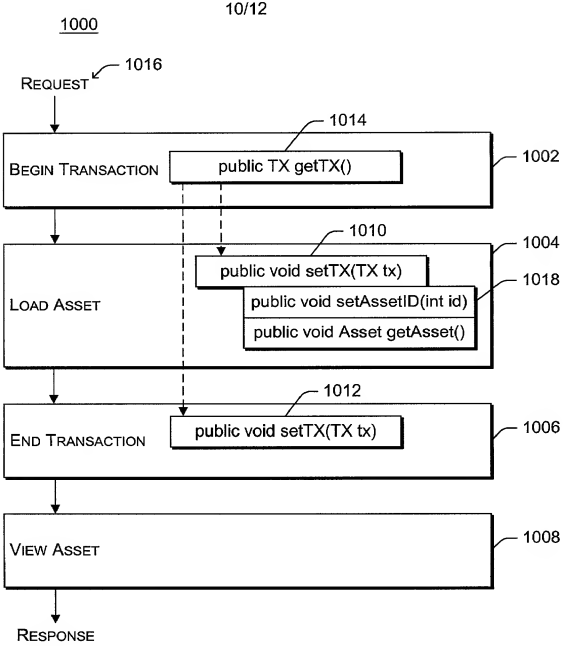
1000
1016
REQUEST
1014
BEGIN TRANSACTION
public TX getTX()
1002
1010
1004
public void setTX(TX tx)
1018
LOAD ASSET
public void setAssetID(int id)
public void Asset getAsset()
1012
END TRANSACTION
public void setTX(TX tx)
1006
VIEW ASSET
1008
RESPONSE

Fig. 10

1100

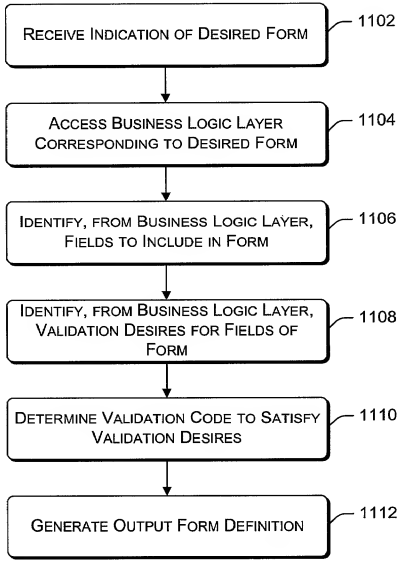

Fig. 11

Microsoft Confidential

1200

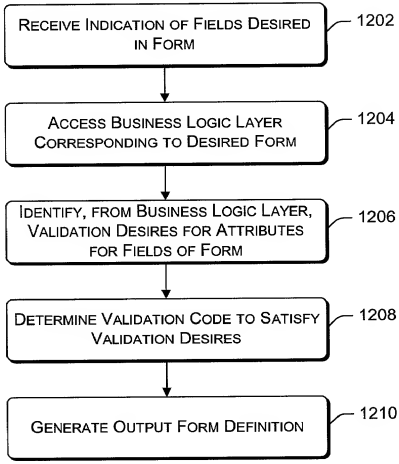
RECEIVE INDICATION OF FIELDS DESIRED IN FORM
1202
ACCESS BUSINESS LOGIC LAYER CORRESPONDING TO DESIRED FORM
1204
IDENTIFY, FROM BUSINESS LOGIC LAYER, VALIDATION DESIRES FOR ATTRIBUTES FOR FIELDS OF FORM
1206
DETERMINE VALIDATION CODE TO SATISFY VALIDATION DESIRES
1208
GENERATE OUTPUT FORM DEFINITION
1210

Fig. 12